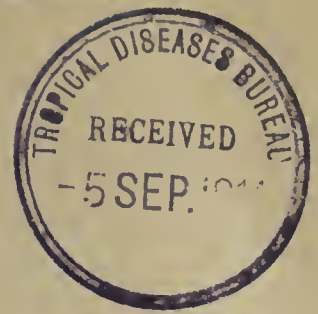


SOUTHERN NIGERIA.

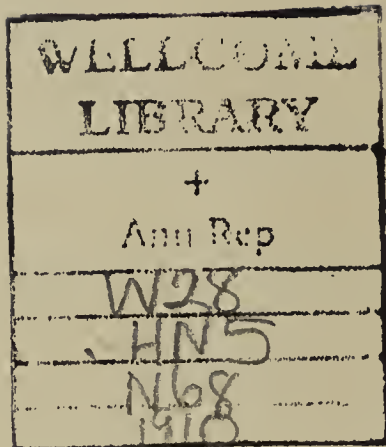


NO. 8 OF 1912.

Paper laid on the table of the Legislative Council
on the 1st day of February, 1912.

SUBJECT:—

Annual Report on the Medical Research
Institute for the Year 1910.



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Second Annual Report of the Medical Research Institute for the Year 1910.

This the Second Annual Report deals with the working of the Medical Research, Institute Yaba, Lagos, Southern Nigeria, for the year 1910, and embraces the period from the arrival of the Director in April, 1910, to his going on leave late in March, 1911.

The issue of the report is necessarily irregular as it cannot be completed until the Director has been enabled during his leave in England to complete the identification of specimens collected and to become acquainted with the new literature dealing with the subjects of his investigation.

1. *The Buildings.*—The work of the Institute has been carried on in the old laboratory building described in the first report.

The structural unfitness was early experienced and last October the erection of new buildings was begun.

These buildings will consist of a laboratory of three rooms, an operating room, and a reaction stable.

On their completion, sufficient accommodation will have been provided to enable separate processes to be carried out in separate rooms, and the old laboratory building will be used as a general laboratory where work of such a nature as cannot be introduced into a bacteriological laboratory can be safely carried on. Such a laboratory will become an absolute necessity as soon as the completion of the contemplated residential bungalows makes the advent of scientific visitors or students possible.

2. *The Museum.*—An open space beneath the Director's bungalow was enclosed for use as a temporary museum. A large cool well lighted room was thus obtained at a very small cost. In this room is now housed the local collection of fauna and pathological specimens.

It is to be hoped that the collection will receive contributions from collectors in all the West Coast Colonies but the presence in Southern Nigeria of a travelling official of the Entomological Research Committee (Tropical Africa) has very greatly curtailed the receipts during the present year, as almost all collections made in the Colony have been sent home and the local collection has been deprived of many specimens which would have added to its completeness.

The specimens in the museum are arranged in drawers under printed labels or in a museum case in suitable glass tubes and are now available for use by visitors for study or for purposes of identification.

A great deal of work has already been done at the classification and arrangement of the following collections:

1. The West Coast mosquitoes. A very complete collection of specially chosen specimens is available.
2. The mosquito *larvae* of Lagos. Fairly complete.
3. The biting flies. Fairly complete.
4. The *diptera* of economic importance.
5. The *ixodinae* (Ticks). Fairly complete.
6. Fleas and bugs.
7. Parasitic worms.
8. Specimens of human and animal pathology.

3. *Library.*—This room has been provided by enclosing another of the open spaces beneath the Director's bungalow.

It is now furnished with a book case, table and chairs.

It will require several years to get together an even fairly representative collection of books and periodicals though a beginning has already been made and such books and periodicals as the library contains are now available for consultation by suitable visitors.

4. Two new bungalows which will provide the necessary accommodation for the Assistant Bacteriologist and for student-visitors, are to be completed this year.

When these bungalows are erected it will be possible for Medical Officers from any of the West African Colonies to obtain quarters at the Institute for a period of study or original investigation.

I have already laid before His Excellency the Governor a proposal dealing with this matter but a final arrangement must await the completion of the necessary quarters.

5. *The Grounds.*—The grounds near the buildings have been further cleared and planted with grass during the year. They are temporarily enclosed with a barbed wire fence to prevent the trespass of cattle. This temporary fence is to be replaced next year by a permanent one which will become absolutely necessary as soon as experimental animals are to be kept.

6. *The Staff.*—The Director has been single handed during the whole of his tour this year owing to the absence of the Assistant Bacteriologist. In all other respects the staff arrangements have remained the same as they were last year.

THE WORK OF THE LABORATORY.

For the first time in the history of the West African Colonies it has been possible this year for cases of obscure diagnosis and unknown parasites, occurring in the daily practice of the Government Medical Staff to be examined within the Colony in a Laboratory equipped for the purpose.

CHEMICAL ANALYSIS.

By direction of His Excellency the Acting Governor the urgent work of the chemical laboratory was undertaken during the absence on leave in England of the Government Chemist and the following subjects were dealt with.

1. An examination for the Committee of Enquiry into the Lagos Electrical Station was made and chemical analyses furnished of the boiler-scale and of the softener and well water used in the engines and a report written for their information.

2. For the Lagos Government Railway the chemical analysis of weekly samples of well and reservoir water was undertaken and over 40 samples reported on.

3. A medico-legal case where poisoning was suspected.

The stomach contents, liver, and kidney, were examined for the poisonous alkaloids with negative results.

4. Analysis of native medicine used as vaginal tampon.

PATHOLOGY.

A number of post-mortem specimens were sent by the members of the West African Medical Staff for a detailed examination and the following pathological conditions were reported.

HUMAN.

1. Sarcoma of foot.
2. Glioma.
3. Epithelioma of foot.
4. Spindle celled sarcoma of spleen.
5. Sarcoma of cervical gland.
6. Squamous celled epithelioma of leg.
7. Cavernous angioma of Hand.
8. Leprosy of kidney.
9. Myeloid Sarcoma of lip.
10. Lamellar fibroma of spleen.
11. Soft fibroma of ext. oblique.
12. Round celled sarcoma of liver.
13. Myxoma of pancreas.
14. Tubercular abscess of kidney.
15. Yellow fever.

CATTLE.

1. Pleuro pneumonia of lung from ox.
2. Trypanosomiasis of liver and spleen in horse.

BACTERIOLOGICAL.

1. The bacteriological examination of samples of water taken from 19 of the public wells of Lagos township was made. The presence of sewage contamination as evidenced by the presence of *Bacillus Coli* was found to be very common and the bacteriological contents per cubic centimetre of the water of all the wells was found to be high.

2. A number of throat and nasal swabs were sent for bacteriological examination in suspected cases of diphtheria and leprosy. They were examined with negative results.

ROUTINE CHEMICAL EXAMINATIONS.

The material for the following examinations was sent to the Institute by members of the West African Medical Staff.

- 71 Blood examinations for parasites.
- 15 Differential blood counts.
- 3 Widal reaction tests.
- 25 Urine examinations (chemical and spectroscopic).
- 26 Microscopic Sections of post mortem material.
- 3 Sputum examinations.
- 2 Nasal excretion examinations.

ENTOMOLOGY.

The identification of the entomological specimens sent in by members of the West African Medical Staff and by others has demanded a good deal of time. The labour spent upon the identification of many hundreds of insects has however been well spent for it has enabled the fauna of each station to be investigated by the medical officer or other interested person on the spot, and the prompt information supplied by the Institute has made it possible for maps shewing the distribution to be drawn up by the collectors. Most of the specimens received were already represented in the local collection.

Since the first Annual Report was issued the following specimens not mentioned in that report have been received or caught at the Institute. Only insects to which special interest attaches are mentioned.

Tabanidae.

1. *Chrysops distinctipennis* Austen, Offa, July.
2. *Haematopota decora* Walker, Oshogbo, July.
- " *laccessens* Austen, Offa, July.
3. *Tabanus congolensis* Ricardo, Agege, January.
- " *combustus* Bigot, Yaba, December.
- " *Sp. incert.* Agege, February.

Stratiomyidae Plecticus elongatus Loew. These flies are common on the windows and in the grounds of the Institute and are probably of economic interest.

The *larvae* were found in a cucumber grown in the garden at Yaba. They were removed from the cucumber and placed in the earth on the 5th September, 1910, and the flies appeared on the 14th September, 1910.

The discovery of the *larvae* and *pupae* and one at least of the breeding places of the fly may become a matter of interest to agriculturalists.

Muscidae.

1. *Stomoxys brunnipes* Grünberg. This fly is frequently found upon the windows at Yaba.

2. *Synthesiomyia brasiliensis* B. & von B. In last year's report I stated that this fly had been found upon windows at Yaba. As the species was originally described by B & von B from Brazil its presence here was a surprise. This year a plan of the Town of Lagos was received upon which I found a Brazilian quarter marked and upon consulting the Military Report of Southern Nigeria, 1908, I found on page 92 the following reference "The native population (of Lagos) is mostly of Yoruba stock ; amongst them is a large community of descendants of Yoruba Brazilian slaves speaking Portuguese." It seems probable therefore that this Brazilian fly may have been introduced into Lagos by these slaves on their return from Brazil.

There is also the other possibility that the fly was originally African and was introduced into Brazil by the slaves from Africa. At any rate the matter is one of great interest as showing the way in which species of *Diptera* may have been introduced into localities very remote from their original home.

*Acalypterae.**Trypetidae.*

1. *Dacus flavicrus* Graham.
2. " *fuscovittatus* Graham.
3. " *bivittatus* Bigot.

Ceratitis.

1. *Ceratitis nigra* Graham.
2. " *inscripta* Graham.

This list with that in the first report contains all species of both genera found so far.

IXODIDAE.

Ixoidae.

- I. *Aponomma Ochraceum* Nu.

This tick was found on the pangolin both at Yaba and at Oshogbo in September.

2. *Amblyonma silvaticum* Degeer.

This tick was found on a large rodent at Yaba in March.

ORTHOPTERA.

*Hemimeridae.*1. *Hemimerus talpoides* Walker.

This parasite was found upon the large rat of the country (*Cricetomys gambianus* Waterhouse) at Yaba.

RESEARCH WORK.

A. An original research upon the effect produced upon the excretion of the urinary pigments by a single prophylactic dose of a salt of Quinine was completed and an article illustrated with photographs of the absorption spectra was written upon the subject for the Annals of Tropical Medicine and Parasitology.

The following were the conclusions arrived at.

1. That a dose of 15 grains of Quinine causes an early increase in the amount of water excreted in the urine.

2. That this increase is followed within 24 hours by a marked decrease which is accompanied by an increase in the excretion of pigments.

3. That this pigment consists largely of *urobilin*.

4. That there is an approximate return to the normal excretion of water and pigment, the phase being almost completed in a week.

B. The local species of the family *Trypetidae* were studied and photographed and new species were described and an article upon the subject written for the Bulletin of Entomological Research.

C. A local fish of the genus *Hoplochilus* was discovered that preys on mosquito *larvae*. It was studied, photographed, and an article written upon the subject for the Bulletin of Entomological Research.

D. A monthly examination of the mosquito *larvae*, *Crustaceans*, etc. contained in the domestic water receptacles of Lagos town was made and an article embodying the results arrived at, written for the Bulletin of Entomological Research.

The following were the results obtained:—

INSECT LARVAE FOUND.

1. *Stegomyia fasciata* Fab.
2. *Pectinopalpus fuscus* Theob.
3. *Culex duttoni* Theob.
4. *Culex tigripes* var *Fusca* Theob.
5. *Culex nigrocostalis* Theob.
6. *Pyretophorus costalis*.
7. *Chironomus* (3 species)
8. *Psychoda* (2 species).
9. *Drosophila* (1 specie).
10. *Ephemeridae*.

CRUSTACIA FOUND.

1. *Cyclops simillimus* Brady.
2. *Daphnia* sp.
3. *Cypris* (2 species).
4. *Attheyella africana* Brady.

SUMMARY.

1. The examination of the contents of the domestic water receptacles was found to be a practical and accurate method of studying the mosquito fauna of a township.

2. During the investigation the following points were found to be of importance.

The division and district of the township; for at Lagos conditions differ in different divisions.

The variety of water receptacles (deep or shallow) for some *larvae* prefer barrels to pots and *vice versa*.

The nationality of the householder. The food of the different nationalities differs, and water vessels usually contain particles of food upon which *larvae* may be observed to feed.

D. The extent of the distribution (coast line and inland).

The water on the coast line is mostly brackish, that of the interior is usually almost free from *Chlorides*.

3. A seasonal variation in numbers was shown to occur but the causes were obscure.

4. Sensitiveness to change of environment was found to exist and in one species was supposed to depend upon the amount of *Chlorides*.

5. Two active enemies of mosquito *larvae* were found to exist.

6. It was found that both larvae and pupae were killed by raising the temperature of the water above 45° C.

7. *Stegomyia fasciata* was found to be the commonest mosquito *larva* and was very widely distributed.

8. *Pyretophorus costalis* was found to breed habitually in the domestic water vessels of the native yards.

9. The water in many of these vessels was found to be very foul and in many cases contained sewage.

10. Cyclops and other crustaceans were found to inhabit and breed in the water vessels in native yards.

11. The simultaneous and apparently sympathetic variation of certain species of *larvae* was observed.

Unfortunately I had to go on leave before the completion of this investigation when only 8 months specimens had been examined. Before leaving, however, I handed over my type specimens of *larvae*, etc, to Dr. A. E. Neale and spent considerable time teaching him how to recognise the different species. I hope therefore that the specimens for the four remaining months of the year will have been reported upon with fair accuracy before my return to Lagos.

E. An article describing special methods of mounting and photographing Diptera, with illustrative photographs was written for the Bulletin of Entomological Research in response to many letters asking for information on the subject.

F. An investigation of a sequence of blackwater fever cases occurring in the same house at Ebute-Metta was made and a special report written by order of the Secretary of State.

G. In July orders were received from the Secretary of State directing experiments to be made at the Institute to decide the capacity of *G. tachinoides* to transmit *T. gambiense*. Preparations were made by me and much correspondence took place but at the last moment the investigation was abandoned.

Articles published since last report upon work done in the laboratory.

By Dr. W. M. Graham.

1. On West African *Trypetidae* (Fruit Flies).
Bulletin of Entomological Research, October, 1910.
2. The photography of Diptera.
Bulletin of Entomological Research, July, 1911.
3. Results obtained from a monthly examination of the Native domestic water receptacles at Lagos, Southern Nigeria, in 1910-1911.
Bulletin of Entomological Research, July, 1911.
4. A fish that preys on mosquito *larvae* in Southern Nigeria.
Bulletin of Entomological Research, July, 1911.
5. An investigation of the effects produced upon the excretion of urinary pigments by salts of quinine.
Annals of Tropical Medicine and Parasitology Vol. V-No. 3.

(Sgd.) W. M. GRAHAM, M.B.

Director Medical Research Institute.

Lagos,

5th October, 1911.

